7100
Capillary Electrophoresis System

Installing the detector filter assembly

Overview

The detector filter (part number G7100-62700) transmits light of a defined wavelength range around 260 nm. The purpose of the filter is to protect buffer components such as cross linked polyacrylamid gels or other sensitive compounds from decomposition by the high energy UV light. Figure 1 on page 1 shows a typical intensity spectrum recorded with the LabAdvisor **Intensity** test. Maximum transmission is between 252–266 nm, see Figure 2 on page 1.

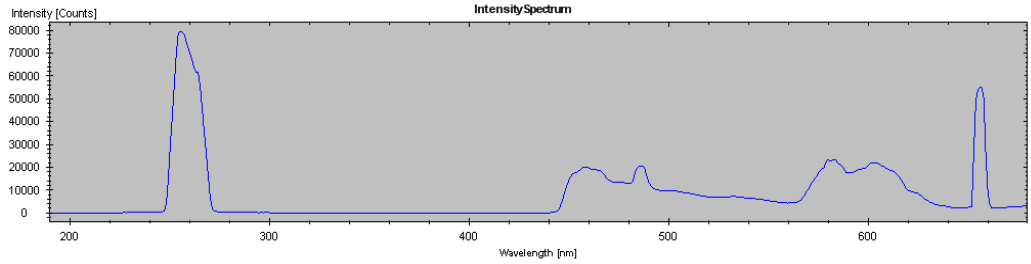

Figure 1 Intensity spectrum with inserted detector filter

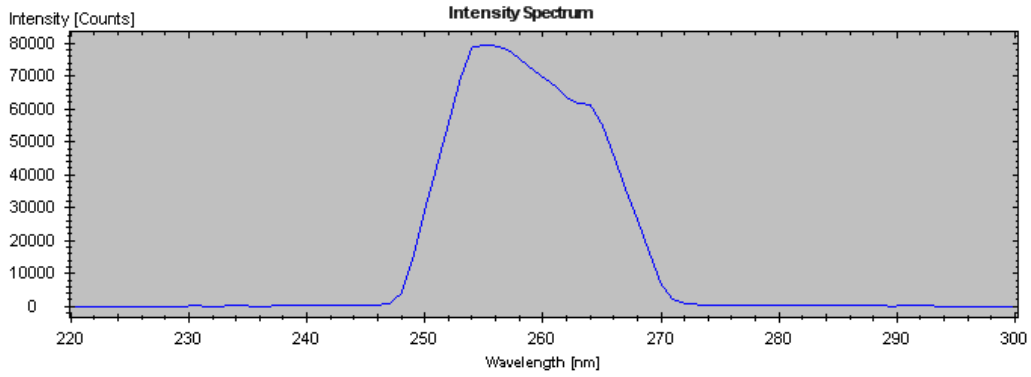

Figure 2 Intensity spectrum with inserted filter (zoom)

For reference a normal intensity spectrum recorded without filter is shown in Figure 3 on page 2.

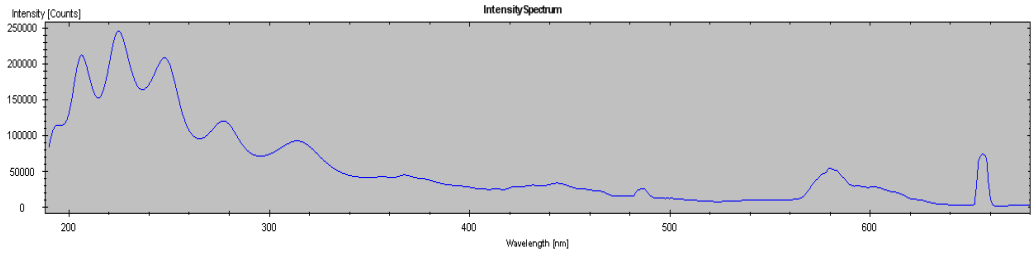

Figure 3 Normal intensity spectrum without filter

Installing the detector filter

NOTE

Fingerprints on optical parts

Do not touch the surface of the filter or any other optical parts. Fingerprints may lead to baseline drifts and may also increase baseline noise of detector response.Take care when handling the filter or other optical parts and store them in the shipping container.

Installing the filter:

1 Lower all lifts either from the ChemStation or LabAdvisor software interface

2 Open the lid and remove the capillary cassette.

3 Insert the detector filter as shown in Figure 4 on page 2

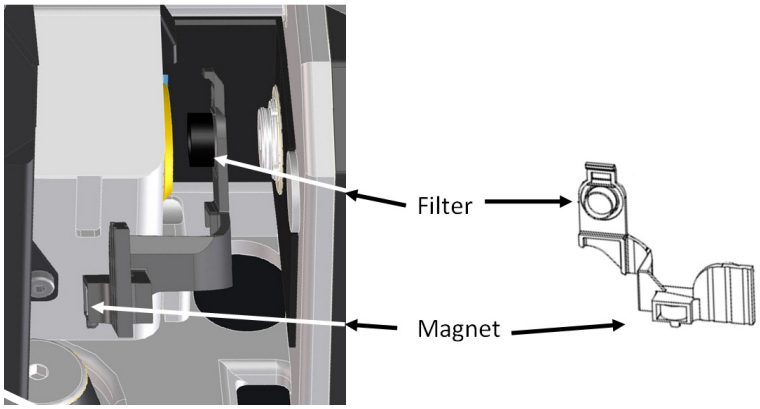

Figure 4 Mounting of the detector filter

4 Insert the round shaped filter element into the DAD light path. Do this best by holding it horizontally so this first step happens without allowing the magnet to snap toward other metal components.

5 By a rotational movement (approximatly 20°), let the magnet clip onto the allen screw, which fixes the detector.

NOTE

Filter damage upon insertion

The filter might accidently block in an awkward angle in the DAD light path, since the magnet for fixation is attracted by other metal components. The filter might break of the plastic part. Carefully avoid torsion onto the filter, especially if the filter is not correctly inserted.

Checking the filter function

Checking the proper function of the filter

1 Install the green alignment interface (part number G7100-60210) without any capillary in the cassette.

2 Insert the cassette carefully into the instrument. Due to the installed filter, the path for insertion is now narrower and the movement requires special attention

3 Start the LabAdvisor software, connect to the instrument and select the **Intensity** test from the **Detector** tests.

4 Execute the **Intensity** test. Compare characteristics to Figure 1 on page 1.

NOTE

Filter damage upon cassette insertion

The filter installation narrows the path for cassette insertion. The filter might be damaged upon cassette insertion. The downward movement of the cassette requires special care. Do not apply force. Do apply a trajectory with a slight jitter or zigzag.

Tips and hints

For operation of the filter, set the wavelength in a range from 252 nm to 266 nm, for example:

- sample wavelength 262 nm and bandwidth 2 nm, or
- sample wavelength 260 nm and bandwidth 4 nm, or
- sample wavelength 258 nm and bandwidth 6 nm.

A reference wavelength is not recommended. If you have to use it, choose a value beyond 440 nm with a broad bandwidth (for example 380±40 nm).

Effect of installed filter on Holmium oxide test

The **Holmium oxide** test from the LabAdvisor software will most probably fail if the detector filter is installed.

This test attempts to find distinct peaks in the holmium oxide spectrum. See Figure 5 on page 3for a normal holmium oxides spectrum. For this test a holmium oxide filter which is built into the 7100 CE detector is moved into the light path and allows an independent verification of the wavelength correctness of the instrument. The **Holmium oxide** test looks for peaks at 361.0 nm, 418.9 nm, 453.7 nm and 536.7 nm.

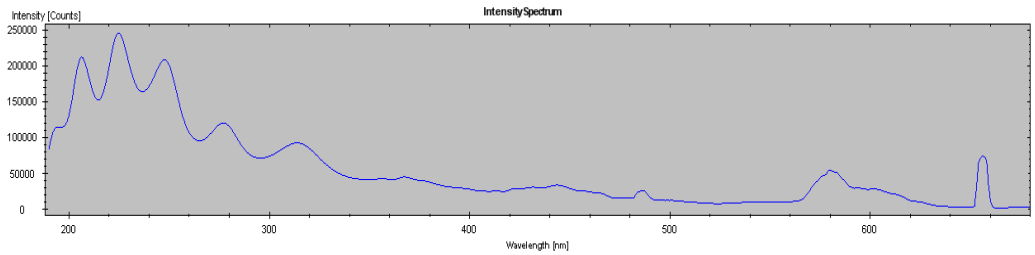

Figure 5 Spectrum in holmium oxide test without filter

With the filter installed relevant parts from the deuterium light spectrum are unavailable and result in noise for the areas with peaks, see Figure 6 on page 4.

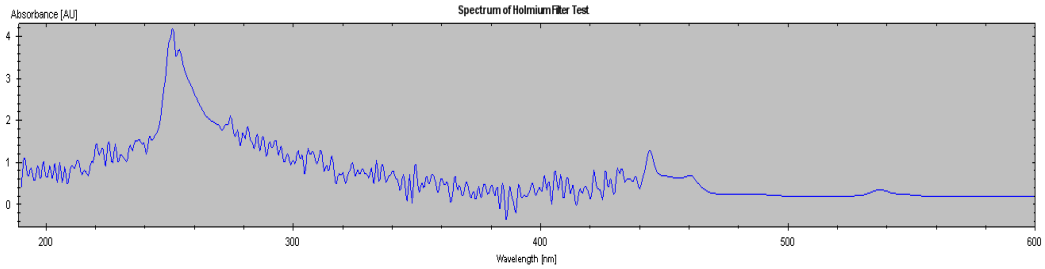

Figure 6 Spectrum in holmium oxide test with filter

Effect of installed filter on low UV range

If the detector filter is installed, the light transmission in the low UV range will be extremely noisy and in the worst case it is not possible to obtain any peaks.

See Figure 7 on page 4 for an electrophoretic separation under identical conditions once with and without installed 260 nm filter. The signal to noise for decreases tremendously.

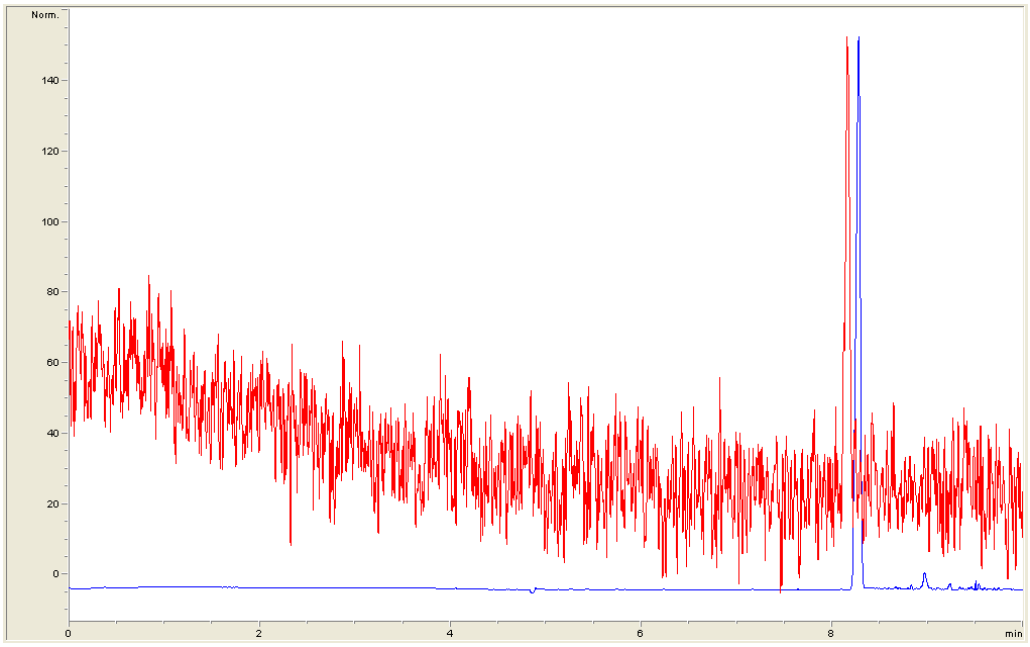

Figure 7 Electrophoresis with detection at 200 ± 4 nm without (blue) and with detector filter installed (red).

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76337 Waldbronn